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A NEW ALOE FROM SOUTH-WEST AFRICA, TOGETHER WITH NEW VARIETIES FROM THE TRANSVAAL AND ORANGE FREE STATE.

(With Plates 23—25)

By G. W. Reynolds.

There are a few known new species of *Aloe* in the Mandated Territory of South-West Africa awaiting description, but it seems that since 1924, when *A. pachygaster* Dinter was published, little or nothing has been done towards clearing them up. With a view to assisting in this direction, the writer has succeeded in getting together in Johannesburg a representative collection of *Aloe* species (and possible crosses), from most parts of S.-W. Africa. When these plants flower, and after allowing for hybrids, the writer hopes to be able to describe and illustrate some of them without much further delay.

In the present paper, a very distinctive new *Aloe* with green flowers, from near Windhoek, is described, together with a new variety from the Transvaal and a new variety from the Orange Free State.

Aloe viridiflora, Reynolds. Species nova, floribus viridulis facile distinguitur. *Planta* succulenta, acaulis. *Folia* 50—60, dense rosulata, basi 8 cm. lata, sensim attenuata et 40 cm. longa, supra planiuscula, subtus convexa, utrinque glauca lineata immaculata, ad margines dentibus deltoideis rectis 2 mm. longis, 2—5 mm. distantibus armata. *Inflorescentia* 1·5 met. alta ; scapus medio circiter 6-ramosus. *Racemi* capitati, 10 cm. longi, 8 cm. lati. *Pedicelli* 20 mm. longi. *Bracteae* ovato-acutae, 7 mm. latae, 15 mm. longae, scariosae, 7—9-nervatae. *Perigonium* viridulum, clavato-cylindraceum, 33 mm. longum, fauces versus circiter 9—10 mm.

diam. *Segmenta exteriora* fere libera, circiter 9-nervata ; *interiora* libera, nervis tribus viridulis approximatis carinata. *Genitalia* 10 mm. exserta. *Ovarium* 5 mm. longum, 2¼ mm. diam.

Hab. Mandated Territory of South-West Africa : On the farm " Rietfontein," Hohenschein mountain, 60 miles east of Windhoek, cultivated plant fl. 25 September, 1936 in Johannesburg, Reynolds 1626 ! (type) in National Herbarium, Pretoria. (Plate 23).

This very distinctive new *Aloe* was discovered in 1932 by Mr. W. Triebner, on rocky slopes near the top of Hohenschein mountain at about 6,000 ft., on the farm " Rietfontein," about 60 miles east of Windhoek. Mr. Triebner records that plants are found in fair numbers, solitary and not suckering, and that he has also found them 70 miles north of Rehoboth.

The most striking feature of *A. viridiflora*, as the name implies, is the peculiar greenish colour of the flowers, a flower colour which does not appear to have been recorded in any *Aloe* hitherto described.

As will be noticed from the accompanying figure, the perianth gradually tapers into the pedicel, the flowers in shape thus very closely resembling those of *A. claviflora* Burch.,[1] in the Section *Asperifoliae*. In *A. claviflora* the pedicels are shorter, the outer segments free for only 15 mm., while *A. viridiflora* has longer pedicels, with the outer segments free almost to base.

In general habit of growth, shape and size of rosette and leaves, and in branching and racemes (but not shape and colour of flowers), *A. viridiflora* seems nearest allied to *A. hereroensis* Engl. which Berger places in the Section *Saponariae*. The writer does not agree with Berger in this respect, and feels that *A. hereroensis* should constitute a new section. *A. viridiflora* certainly cannot be referred to the *Saponariae ;* in some respects it is near the Section *Asperifoliae*, but it does not fit well into any existing section.

As regards cultivation, many of the *Aloes* from Great and Little Namaqualand are difficult to establish away from their natural habitat, especially in localities of much higher rainfall ; good drainage is essential. Planting the stems *in* the ground is almost invariably fatal. The large plant of *A. viridiflora*, when received, was merely firmed down *on* to a raised bed of pebbles 6 inches deep, and never watered. It rooted quickly and flowered in Johannesburg during September, 1936, when the description was drawn up. The plant illustrated is about 5 years old ; Mr. Triebner records that in their natural habitat, the largest specimens have rosettes 3 feet diam., and produce 4 and more inflorescences.

[1] In the January 1938 Part of this JOURNAL full reasons will be given for upholding *A. claviflora* Burchell and reducing *A. Schlechteri* Schonl. to synonymy.

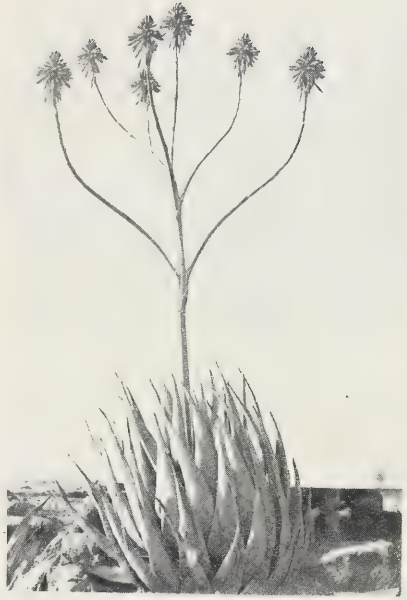

Fig. 1.

Fig. 2.

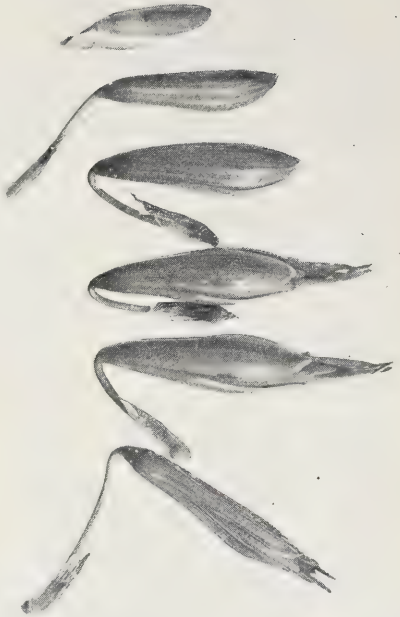

Fig. 3.

Plate 23. *Aloe viridiflora* Reynolds.

Fig. 1. The type plant, height 5 feet, fl. 25 September, 1936, in the author's garden in Johannesburg; originally collected by Mr. W. Triebner near the top of Hohenscheim Mountain, about 60 miles east of Windhoek, S.W. Africa. (*Note.*—In the wild state rosettes are 2-3 feet diam., with 4 and more inflorescences.)

Fig. 2. Raceme × $\frac{1}{3}$ approx.

Fig. 3. Flowers natural size from bud to post-pollination stage.

Fig. 1.

Fig. 2.

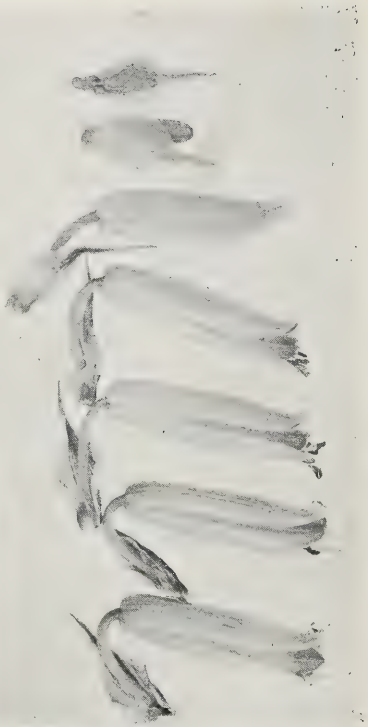

Fig. 3.

Plate 24. *Aloe Wickensii*, Pole Evans, var. *lutea* Reynolds.

Fig. 1. Plant in natural habitat, 8 miles north of Burgersfort, Lydenburg Dist.. Eastern Transvaal, fl. 20 June, 1937.
Fig. 2. Another specimen, 2 miles east of Burgersfort, fl. 20 June, 1937.
Fig. 3. Flowers natural size.

In order to prevent confusion, it might be advisable to mention that *A. viridiflora* is the species hitherto known to a few under the unpublished manuscript name of *A. Riehmeri*.

Description.—Plant succulent, acaulescent, solitary. *Leaves* 50—60 in a compact dense rosette, arcuate-erect with the apices slightly recurved, 8 cm. broad at base, gradually attenuate and up to 40 cm. long ; upper surface flat low down, slightly canaliculate upwards, glaucous, immaculate, obscurely lineate ; lower surface convex, immaculate, lineate, glaucous with a pinkish tinge ; margins sinuate-dentate, armed with deltoid pungent straight pinkish-brown teeth 2 mm. long, 2—5 mm. distant. *Inflorescence* a branched panicle 1·5 met. high. *Peduncle* flattened and 3 cm. diam. low down, 6-branched from about the middle, the branches erectly spreading in lower half, thence arcuate-erect, the lowest branches subtended at base by thin, scarious, pale brownish ovate-acute many-nerved bracts 25 mm. long, 30 mm. broad ; without sterile bracts below the first branch, the branches below the racemes clothed with several ovate-acute thin, scarious, many-nerved sterile bracts about 16 mm. long, 8 mm. broad. *Racemes* capitate, densely 50—60 flowered, 10 cm. long, 8 cm. diam. at middle, conical in upper half with buds erect, thence gradually horizontally disposed to cernuous, with the open flowers distinctly pendulous and lying close to the main axis. *Pedicels* green, 20 mm. long, reaching 30 mm. in the fruit. *Bracts* ovate-acute, 15 mm. long, 7 mm. broad at base, thin, scarious, pale brownish, marked with about 7—9 pale brownish nerves. *Perianth* green, tinged with lemon about the middle, clavate-cylindric, 33 mm. long, 9—10 mm. diam. at widest part near throat, gradually tapering into the pedicel. *Outer segments* free almost to base, with about 9 crowded green nerves, the margins paler, the apices sub-acute, scarcely spreading. *Inner segments* free, not cohering dorsally to the outer, greenish-orange in colour, with 3 congested greenish nerves forming a keel, the apices brownish and more obtuse than the outer, with the margins edged with brown for 5 mm. from apex. *Filaments* slightly flattened, the 3 inner slightly narrower and lengthening in advance of the three outer, the included part lemon, the exserted portion (10 mm.) deep orange. *Anthers* in turn exserted 10 mm. *Stigma* exserted 10—12 mm. *Ovary* green, 5 mm. long, $2\frac{1}{4}$ mm. diam., finely 6-grooved.

Aloe Wickensii, Pole Evans, var. **lutea** Reynolds. Varietas nova, a forma typico alabastris luteis et racemis luteis unicoloris differt.

Hab. Transvaal : Lydenburg District, near Burgersfort, fl. 22nd June, 1936, Reynolds 1476 ! ; Waterval Valley, 21 miles N.-W. of Lydenburg, fl. 11 July, 1936, Reynolds 1945 ! ; Buffelsvlei, fl. 11 July, 1936, Rey-

nolds 1946 ! ; Burgersfort fl. 11 July, 1936, Reynolds 1949 ! (type). Pietersburg Dist. : 10 miles N.-W. of Malips Drift, fl. 22 June, 1936, Reynolds 1356 !, all in National Herbarium, Pretoria, and Bolus Herb., Kirstenbosch. Plants 1653/35 (ex Burgersfort) in National Botanic Gardens, Kirstenbosch; No. 1415.7.36 (ex Waterval Valley) and 1416.7.36 (ex Burgersfort) in garden of Botanical Section, Div. of Plant Industry, Pretoria. (Plate No. 24.)

Before discussing varietal characters, it is advisable to attempt to clear up the confusion existing concerning the identity and distribution of *A. Pienaarii* Pole Evans and *A. Wickensii* Pole Evans. These two species though closely allied, are distinct, but there are large numbers of plants in public and private gardens which do not fit the description of either species. Evidently those plants must have originated from localities where both *A. Pienaarii* and *A. Wickensii* grow socially, cross freely, and produce a tremendous variation in shape, size and colour of racemes and flowers.

Briefly, in typical *A. Pienaarii* the inflorescence is compactly 5—8-branched, the buds and flowers are dull scarlet, the cylindric-acuminate racemes presenting a more or less unicoloured reddish effect, with the flowers 40—45 mm. long, cylindric-trigonous and rather straight.

In typical *A. Wickensii* the inflorescence is more divaricately branched and usually bears only three racemes ; the racemes are shorter and more conical, the buds are dull reddish with the open flowers lemon-yellow, the racemes thus presenting a distinctly bicoloured effect. The flowers are distinct from those of *A. Pienaarii*, being shorter, broader, with the mouth upturned and the lowest outer segment distinctly naviculate.

A. Pienaarii occurs at Smit's Drift, 23 miles east of Pietersburg, (type locality) and extends westward and southwards through the Rustenburg and Groot Marico districts to Lobatsi in Bechuanaland. In this area it is not found in association with *A. Wickensii* and these plants, though variable, are typical of the species.

A. Wickensii occurs south of the Chunes Mountains, westwards to Chunes Poort 23 miles south of Pietersburg, (type locality) and extends westwards to Zebediela and Potgietersrust. In this area it is not found growing socially with *A. Pienaarii*, these plants being typical of the species. From Smits Drift *A. Pienaarii* extends southwards, while from Chunes Poort *A. Wickensii* extends eastwards until they meet at a point about 10 miles North-West of Malips Drift. At this locality, doubtless due to hybridisation, an amazing variety of shapes, sizes and colours of racemes and flowers occurs, while throughout M'Phathlele's Location and Secocoeniland, and especially in the Olifants, Steelpoort, Waterval and Spekboom River valleys, this confusion is maintained. It is therefore

evident, that unless carefully selected when flowering, plants from these localities might turn out to be crosses of various generations and segregations, which will not fit the description of either *A. Wickensii* or *A. Pienaarii*.

Near Burgersfort and in that neighbourhood, plants occur with yellow buds and yellow flowers, the racemes thus being unicoloured yellow. It has been suggested that such plants are also crosses between *A. Pienaarii* and *A. Wickensii*, but this can hardly be the case since yellow buds is a character neither of the unicoloured reddish racemed *A. Pienaarii* nor of the bicoloured *A. Wickensii*. These plants therefore well merit varietal rank. The variety is variable in branching, the inflorescence being compactly or divaricately 3—6-branched, while it is also variable in length and shape of flowers. The usual length of the perianth is 35 mm., in weak forms it is sometimes only 31 mm., while in strong forms a length of 40 mm. is reached, in which case the perianth is usually straighter. In shape size and colour of flowers, it is mostly nearer *A. Wickensii* and for this reason a var. *lutea* to *A. Wickensii* is proposed.

The var. *lutea* seems to have its headquarters in the vicinity of Burgersfort, it extends southwards to the Waterval Valley (21 miles from Lydenburg), westwards along the Steelpoort River to Steelpoort and beyond, and northwards to a point 10 miles beyond Malips Drift. It is a particularly handsome plant, and one well worth cultivating ; it flowers usually in June—July, and should be given some protection from frosts. The chief distinguishing characters of the variety are the flowers nearer *A. Wickensii* in shape, size and colour, and the yellow buds and yellow flowers forming unicoloured yellow racemes.

Description : *Plant* succulent, acaulescent or very shortly caulescent, solitary, with stem simple, sometimes in small groups of 2—4 plants. *Leaves* about 30, densely rosulate, ensiform or gradually attenuate from the base, arcuate-erect, sometimes incurved, up to 90 cm. long, 11—12 cm. broad at base in old specimens ; upper surface flat to slightly canaliculate, lower surface convex, both surfaces coriaceous, dull grey-green, immaculate ; margins sinuate-dentate, armed with deep brown deltoid pungent teeth 2 mm. long, 2—10 mm. distant, usually more crowded near base, more distant near apex, sometimes bifid, usually isolated and directed forward. *Inflorescence* up to 1 ·5 met. high, 2—3 simultaneously, compactly to divaricately 3—5-branched from about the middle. *Peduncle* brown, biconvex and 3—5 cm. diam. at base ; the branches usually arcuate-erect and subtended at base by thin scarious many-nerved pale brown ovate acuminate bracts. *Racemes* unicoloured yellow, densely cylindric-acuminate, 20—25 cm. long, the yellow buds greenish to pale orange tipped, sub-erect, usually obscured by their longer spreading

bracts, the open flowers slightly laxer, cernuous to subpendulous. *Bracts* ovate in lower half, acuminate above, up to 25 mm. long, 18 mm. broad at base, very thin, subscarious, pale brown, about 12-nerved. *Pedicels* lowest up to 25 mm. long, up to 30 mm. in the fruit. *Perianth* lemon-yellow, (R.C.S.) cylindric-trigonous with upturned mouth, 32—40 mm. in length, 35 mm. the usual. *Outer segments* free, faintly pale nerved throughout their length, the two upper more closely grouped, the lowest naviculate, the apices sub-acute, spreading, somewhat brownish-tipped. *Inner segments* free, not cohering to the outer, broader than the outer, with thin white margins and with 3—5 congested nerves in median line, the apices brownish, more obtuse and more spreading to revolute than the outer. *Filaments* lemon-yellow, much flattened, the 3 inner narrower and lengthening in advance of the 3 outer. *Anthers* the inner and outer in turn exserted 2—4 mm. *Stigma* at length exserted 5—8 mm. and remaining exserted after pollination. *Ovary* 9 mm. long, 4·5 mm. diam. at middle, 6-grooved, green. *Capsule* 26 mm. long, 13 mm. diam. 6-grooved, green, for a long time enwrapped with the remains of the dry perianth.

Note.—The leaf sap is purplish-lilac (R.C.S.) in colour.

Aloe saponaria (Ait.) Haw., var. **ficksburgensis** Reynolds. Varietas nova, a forma typico pedicellis floribusque brevioribus, racemis parvis late conicis differt.

Hab. Orange Free State : On northern slopes of sandstone hills at Molen Spruit, 4 miles west of Ficksburg, fl. 6 Sept., 1936, Reynolds 2087 ! (type) ; 2086 ! (forms). Basutoland : 4 miles south of Leribe, fl. 8 Sept., 1936, Reynolds 2089 ! (typical) and 2090 ! (red flowered form), all in National Herb., Pretoria. Plants No. 1674.8.36 in Garden of Bot. Sect., Div. of Plant Industry, Pretoria ; and No. 1824/36 in National Bot. Gardens, Kirstenbosch. (Plate No. 25.)

Plants regarded as belonging to the species *A. saponaria* (Ait.) Haw., found from the Cape Peninsula through the Eastern Province and Transkei into Natal, though variable, are characterised principally by their corymbose racemes 10—15 cm. diam., with the pedicels and flowers 35—50 mm. long. The var. *ficksburgensis* differs with racemes smaller more broadly conical or round topped, with shorter pedicels (25 mm. against 35—50 mm.), and shorter flowers (35 mm. against 40—50 mm.). In *A. saponaria* the bracts are mostly one quarter to one half the length of their pedicels, while in the variety they are as long as their pedicels or a little longer ; in *A. saponaria* the pedicels are usually as long as the perianth and longer, and sometimes reach 60—70 mm. in strong forms, while in the variety the flowers are longer than their pedicels.

FIG. 1.

FIG. 2.

FIG. 3.

PLATE 25. *Aloe saponaria* (Ait.) Haw., var. *ficksburgensis* Reynolds.

FIG. 1. Plants fl. 6 September, 1936, at Molen Spruit, 4 miles west of Ficksburg, O.F.S.
FIG. 2. A raceme × $\frac{1}{3}$ approx.
FIG. 3. Flowers 1/1, from the bud to post-pollination stage.

The var. *ficksburgensis* is named after the locality where it is found in considerable quantities, namely, on northern slopes of a sandstone hill at Molen Spruit, 4 miles west of Ficksburg ; it is also found on a hill about two miles north of Ficksburg, and near Leribe and Pitsing in Basutoland.

Plants are variable, in some the racemes are more corymbose or more conical than the raceme figured, while flowers vary in length from 30 mm. in weak forms to 40 mm. in the strongest. Some plants appear to differ sufficiently to be specifically distinct, but it is considered more advisable to accord them only varietal rank. From an examination of a large amount of material, and the measurements tabulated, it was found that racemes averaged 8 cm. diam. with the apex rounded or broadly conical, pedicels and bracts 25 mm. long, the flowers 35 mm. in length, which are the principal distinguishing features of the variety.

The variety suckers freely, forming dense groups ; usually there is only one inflorescence from a rosette, simple or with one to two branches. The predominating colour of flowers is Salmon-orange or Capucine-yellow (R.C.S.) although occasionally plants are found with yellow, orange, or reddish flowers. The description is based on personal observations at the localities cited during September 1935 and 1936.

Description.—Plants acaulescent or very shortly caulescent, freely suckering and forming dense groups. *Leaves* about 16, densely rosulate, obliquely spreading, broadly and shortly lanceolate, about 10 cm. long with an additional 5—10 cm. of dried twisted apex, about 8 cm. broad at base ; upper surface greenish near base, rather brownish upwards, slightly canaliculate, with numerous spots confluent and more or less arranged in undulating interrupted transverse bands ; lower surface convex, paler green, usually immaculate, sometimes with obscure immersed spots ; margins sinuate-dentate with horny edge, armed with light brown deltoid pungent straight teeth 4—5 mm. long, 10 mm. distant, the interspaces rounded. *Inflorescence* usually about 50 cm. high, sometimes 2 from a rosette, simple or with 1—2 branches from the middle or lower ; peduncle brown, flattened low down and 20—30 mm. diam., clothed in upper half with a few ovate-acuminate many-nerved sterile bracts up to 30 mm. long. *Racemes* capitate, 7—8 cm. long, 8 cm. broad, with densely congested sub-erect buds forming a rounded or broadly conical apex, the open flowers sub-pendulous. *Pedicels* 25 mm. long, reaching 30 mm. in the fruit. *Bracts* deltoid-acuminate, thin scarious 7—9-nerved, as long as their pedicels. *Perianth* nearest Capucine-yellow (R.C.S. Plate III), 35 mm. long, with an 8 mm. diam. basal swelling, constricted to 5 mm. above the ovary, thence slightly decurved and enlarging towards the throat and forming an open triangular mouth.

Outer segments free for 10 mm., paler at the margins, the apices subacute, straight or slightly spreading. *Inner segments* dorsally adnate to the outer for 25 mm., broader than the outer and with more obtuse more spreading apices. *Filaments* pale lemon, flattened, the 3 inner narrower and lengthening in advance of the 3 outer. *Anthers* exserted 1—2 mm. *Stigma* at length exserted 2—3 mm. *Ovary* 7 mm. long, 3 mm. diam. at base, finely 6-grooved, green. *Capsule* oblong, 26 mm. long, 15 mm. diam. at middle.